APPLICATION OF RESPONSE SURFACE METHODOLOGY TO OPTIMIZE THE PROCESS VARIABLES FOR COPPER ION DETERMINATION IN BEER USING CLAY

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People's anxieties also increase because of the increased awareness of what the toxic substance levels in the environment and the effects of these toxic substances may be. Pollutions caused by heavy metals stand in aqueous wastage of many industries. They are released into the aqueous system through a variety of sources. Heavy metals show toxic effects because they cannot biodegrade in nature. The heavy metal such as copper, because of their toxicity influence, contamination demonstrates a major problem. Cu^{2+} has high prior for removal from environments amongst heavy metals because of hazardous effect and considered as one of the most toxic one. When excessive intake of copper, it can be travelled through the food chain *via* bioaccumulation, the increase of Cu^{2+} in human body causes some major diseases such as brain, skin, pancreas, and heart diseases. That is to say, the metal may show toxic effects even if the metal concentration is low. Experimental studies were accomplished based on a Box–Behnken Design (BBD) and examined using response surface methodology. The aim of present research was to apply BBD for modelling of Cu^{2+} from alcoholic beverages pre-treated clay was conducted in batch experimental conditions. The independent factors importance and their interactions were investigated using analysis of variance. The present study includes the Cu^{2+} adsorption through the process of adsorption from aqueous medium onto clay. Effect of several factors such as solution pH and stirring time were studied. Under the optimum conditions (adsorption solution pH 5.0, stirring time 62.5 min, adsorbent dosage 0.15 g, solution final volume 212.5 mL), pre-concentration factor of the proposed method was approximately 50. Optimized method was applied to alcoholic beverage. Clay was characterized by X-ray diffraction; Fourier transformed infrared spectroscopy and scanning electron microscopy coupled with energy dispersive X-ray analysis.

Recent Publications

1. Ince M, Kaplan Ince O, Asam E and Onal A (2017) Using food wastes biomass as effective adsorbents in water and wastewater treatment for Cu (II) removal. Atomic Spectroscopy 38(5):142-148.

Biography

Onal A received his Technician degree from Munzur University, Tunceli Vocational School Department of Food Technology at 2011 and he is a Student in Department of Food Engineering at the Munzur University. He is the author of more than three papers that published in journals with good impact factor in their area and his research areas including Atomic Absorption Spectroscopy, Trace and Toxic Element Analysis, Instrumental Analysis, Problem Solving in Chemistry and Food Science.

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